

### Abstract

2        A calibration technique is presented for calibrating one or more non-  
3        reference indirect measurement systems with respect to a reference indirect  
4        measurement system. A reference map function fitting procedure fits a  
5        reference map function based on known values of a parameter of interest  
6        associated with each of one or more reference calibration samples and  
7        corresponding reference values associated with the one or more reference  
8        calibration samples measured on or simulated for the reference indirect  
9        measurement system. A correction function fitting procedure fits a correction  
10      function based on reference values for one or more calibration samples  
11      measured on or simulated for the reference indirect measurement system  
12      and corresponding values measured on the non-reference indirect  
13      measurement system. During normal use, the non-reference indirect  
14      measurement system obtains measurements that are indirectly  
15      representative of a parameter of interest of an object, corrects the raw  
16      measurements using the correction function to corresponding corrected  
17      measurements in order to minimize measurement differences between the  
18      indirect measurement system and the reference indirect measurement  
19      system, and estimates the parameter of interest of the object using the  
20      reference map function based on the corrected measurement. Reference  
21      map function fitting is typically performed only once, while correction function  
22      fitting is updated periodically and independently of the reference map  
23      function fitting to account for drift due to systemic, environmental, or other  
24      variations.